DEPARTMENT OF AGRICULTURE, BENGAL

ANNUAL REPORT

OF THE

RAJSHAHI AGRICULTURAL STATION

FOR THE YEAR

1912-1913.

CALCUTTA:
THE BENGAL SECRETARIAT BOOK DEPOT.
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ANNUAL REPORT OF THE RAJSHAHI AGRICULTURAL STATION FOR THE YEAR 1912-13.

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ANNUAL REPORT OF THE RAJSHAHI AGRICULTURAL STATION FOR THE YEAR ENDING 30TH JUNE 1913.

Introduction.—This station is situated in Rajshahi Town (one of the most important towns in the Rajshahi Division of Bengal). Though opened in 1904-05 the work that has been done at this farm is not as satisfactory as might have been expected. For some time it was uncertain whether the farm would be closed as the Railway thought of acquiring the site, and even now the farm is not fully equipped for an agricultural station, while the Superintendent in charge is not educated or qualified for the post he holds. We are still then, as would be expected from the above, in the time of heavy expenditure and small receipts. I cannot take the responsibility for this as the farm is a good one and ought to pay out of receipt of sale-proceeds the ordinary expenditure of the farm.

The farm acts as a centre of distribution for seeds, manures and implements, but the apathy of the public in this district caused the Superintendent to have no work in this section. What seeds were distributed from this farm were sent to other parts of the Province, but this even did not entail much work.

Hitherto at this farm work has been done on sugarcane, jute sunn hemp, *aman* and *aus* paddy, potatoes and *rabi* crops. In 1913-14 the chief work will be on jute seed, production for seed supply and on sugarcane and potatoes. During the year seeds of some of the abovementioned crops were distributed, and the farm can act as a depôt for seeds, manures and implements for this district when local people become interested.

A *pucca* cattle-shed and threshing floor are now being built at this farm.

The striking result of our work in 1912-13 was the overwhelming nature of the climatic factor. Owing to a partial

drought in September and October the outturn of *aman* paddy was lowered to 6 maunds per acre as compared with 24¼ maunds in 1911. This is a much greater difference than that caused by any other or all other factors, such as manure variety and methods of cultivation put together. It is therefore very essential in coming to any definite conclusion that the climate or several years should be considered.

Striking results have also been obtained with sugarcane, *aus* paddy and potatoes.

Sugarcane and potatoes suit this soil and district. Both crops can be economically grown on such soils in this district without irrigation and on 150 maunds of cowdung per acre.

The Rangpur *vendamukhi* cane and the Hooghly *shamshara* variety give an increased outturn of 20 maunds of *gur* per acre over the local variety which is deservedly popular on account of its cheap cost of cultivation.

Darjeeling and Italian potatoes, both waxy varieties, are suited to this soil and district and may be profitably employed. A very important point to observe is the larger outturn of tubers that is obtained by employing large sets at planting time.

The local variety of *aus* paddy—Morisboty—is the best variety for this soil and district and should be improved by selection at harvest time. This corroborates all our work hitherto on varieties of paddy, viz., that the most popular variety of paddy in any district is the most economical for that district.

2. *Situation and Brief History.*—This farm is situated in East Longitude 88°7 and North Latitude 24°3 in Rampur Boalia town, the head-quarters of the Rajshahi district. The station was opened in November 1904.

3. *Area.*—The area of the station is 63 acres of which 50 acres are available for cultivation, the remainder being occupied by buildings, roads, tanks and drains.

Of this 50 acres, one quarter of the area is suited to winter paddy, the remainder being suitable for jute, *aus* paddy, sugarcane, sunn, juar, and *rabi* crops.

4. *Irrigation.*—There is no irrigation on this farm. The crops depend entirely on the natural rainfall.

5. *Character of the soil.*—The soil of this farm is a marl. The low winter paddy land is a clay marl while the higher land is a sandy marl.

The following is an analysis of an average sample of soil collected from seven plots on the farm:—

Silica	77·90
Ferric Oxide	4·56
Alumina	6·15
Lime	3·29
Magnesia	1·37
Potash	·65
Soda	·21
Phosphoric acid	·11
Sulphuric acid	·03
Carbonic acid	2·34
Organic matter and combined water ...	3·39
	100·00

The following table gives details of plant-food in the soil of each sample:—

	196-07 Plot No. 3.	197-07 Plot No. 37.	198-07 Plot No. 61.	199-07 Plot No. 83.	200-07 Plot No. 110.	201-07 Plot No. 116.	202-07 Plot No. 120.
1	2	3	4	5	6	7	8
Organic carbon	·616	533	844	·8 ·6	·734	·503	·414
„ nitrogen	·054	·095	·085	·089	·081	·059	·043
Calcium carbonate ...	5·400	2·910	3·590	6·360	4·600	6·049	6·322
Total phosphoric acid ...	·085	·039	·051	·146	·109	·042	·106
Available phosphoric acid ...	0·034	·011	·008	·059	·005	·003	·003
„ potash ...	·000	·009	·004	·001	·001	·001	·001

Excepting plot No. 83, these soils are characterised by a deficiency of phosphates and potash; plot No. 83 is better off, more especially in the matter of phosphates. The amount of organic matter is low, but not lower than the Indian alluvial soil generally. There is abundance of carbonate of lime.

6. *Meteorology.*—The following table shows the actual rainfall and number of rainy days recorded on the farm in 1912-13 as well as the normal rainfall and the normal number of rainy days in Rampur-Boalia.

RAJSHAHI.

	Actual Rainfall, 1912-13.		Normal.	
	Amount.	No. of days.	Rainfall.	No. of rainy days.
1912.				
April	2·42	6	1·84	3·0
May	3·95	6	5·64	7·7
June	12·43	13	10·07	12·4
July	11·75	13	10 79	15·1
August	9·41	14	10·42	14·6
September	3·67	5	10·05	12·1
October	0·29	1	4·14	4·6
November	2·62	3	0·38	0·7
December	Nil	Nil	0·06	0·3
1913.				
January	Nil	Nil	0·36	0·9
February	1·60	3	0·75	1·5
March	·88	1	1·12	1·9
	49·02	65	55·62	74·8

Except *aman* paddy the season was favourable for all crops. The drought of September and October 1912, when less than

4″ of rain fell on 6 days instead of a normal of 14½ on 16·7 days, was fatal for the winter rice crop. As a result an average outturn per acre of only 6 maunds of paddy was obtained from 14 acres as compared with an average outturn of 24¼ maunds per acre from 10 acres in 1911. The season was peculiarly favourable for *aus* paddy, jute, sugarcane and all *rabi* crops. Potatoes were grown at this station without irrigation.

A.—General crops grown.

7. *Operations during the year.*—The following table shows the different crops grown during the year with the total outturn obtained and the yield per acre in each case :—

Crop.	Area in acres.	Total outturn.	Yield per acre.	Remarks.
Jute (seed) ...	2	21	10½	Good.
Jute (fibre) ...	6⅔	59	9	Fair.
Aus paddy ...	10⅚	208¾	19⅓	Good.
Winter paddy ...	14	84	6	Bad.
Sugarcane ...	1⅗	116½	72¾	Very good.
Barley	1⅖	5½	4	Bad.
Oats	6½	53	8	Poor.
Potatoes	3½	303½	86½	Fair.
Gram	6⅖	46½	7¼	Poor.
Mulberry	⅘	28	35	Fair.
Wheat	1⅘	11	6	Poor.
Khesari	4	32	8	After *aman* paddy good.
Sunn hemp (fibre) ...	1⅖	8¼	6·6	Bad.
Sunn hemp (seed) ...	1⅖	...	...	Failed.
Maize (fodder) ...	1⅖	155	129	Fair.
Juar (fodder) ...	⅗	82½	137¼	Do.
Dhaincha ...	5⅔	26¾	4¾	Bad.

B.—Experimental Work.

(*i*) Winter paddy or transplanted paddy.
(*ii*) Aus paddy.
(*iii*) Jute.
(*iv*) Sugarcane.
(*v*) Sunn hemp.
(*vi*) Potatoes.
(*vii*) Wheat.
(*viii*) Barley.
(*ix*) Oats.
(*x*) Gram.

1. *Winter paddy.*—The season was so unfavourable to this crop in 1912 that only an average outturn of 6 maunds per acre was obtained. The effect of the climate was far greater than any other factor so that no figures are worthy of publication.

2. *Aus paddy.*—Ten and five-sixths acres of *aus* paddy were grown on this farm from which an average outturn of $19\frac{1}{3}$ maunds per acre was obtained. Three varieties were tried, viz., 2 local ones and the best *aus* paddy from Dacca. The following table shows the area, total outturn and yield per acre from each variety.

AUS PADDY—VARIETIES 1912.

Variety.	Kind.	Area.	Total outturn.	Yield per acre.
		Acres.	Mds.	Mds.
Morisboty ...	(Local coarse)	$7\frac{1}{5}$	$161\frac{3}{4}$	$22\frac{1}{2}$
Kachiapanja ...	Ditto ...	$\frac{4}{5}$	$11\frac{1}{2}$	$14\frac{1}{2}$
Surjamukhi ...	Dacca medium	$2\frac{5}{6}$	$35\frac{1}{4}$	$12\frac{1}{2}$

Morisboty the local coarse variety is easily the best yielder, while the variety from Dacca is the poorest yielder. We therefore recommend the raiyats of the Rajshahi district to keep their own variety Morisboty.

3. *Jute.*—Seven and four-fifth acres were put under this crop for Mr. R. S. Finlow, Fibre Expert.

Of this 2 acres were specially reserved for seed from which 21 maunds of seed were obtained. Another $1\frac{1}{5}$ acre failed altogether.

After saving the above 21 maunds of seed the crop was steeped and yielded $18\frac{3}{4}$ maunds of fibre. From the remaining $4\frac{8}{10}$ acres only 40 maunds of fibre were obtained. Hence apart from the 2 acres reserved for seed which was good, the jute crop in 1912 at this farm was very poor.

4. *Sugarcane.*—The land of this station is particularly suited to sugarcane. Cultivation is easy and simple and irrigation is

unnecessary, while an excellent outturn is obtainable with light manuring. For $1\frac{3}{5}$ acres with a manuring of 150 maunds of cowdung per acre an outturn of $72\frac{3}{4}$ maunds of *gur* per acre was obtained. This quantity at Rs. 5 to Rs. 5-8 per maund makes this crop the most paying on this farm. Especially is this the case when the small amount of expenditure for cultivation is taken into consideration.

A variety test was made in 1912, and the following table gives full particulars of the four varieties tried :—

Variety.	District.	Area.	Cow-dung manure.	Outturn.	Yield per acre.	Per plot cost of cultivation.
		Acres	Mds.	Mds.	Mds.	Rs. A.
Gandheri ...	Dacca ...	$\frac{2}{5}$	150	$27\frac{1}{2}$	69	44 6
Vendamukhi ...	Rangpur ...	$\frac{2}{5}$	150	$31\frac{1}{2}$	79	44 6
Shamshara ...	Hooghly ...	$\frac{2}{5}$	150	$32\frac{1}{2}$	81	42 8
Khari (local) ..	...	$\frac{2}{5}$	150	$24\frac{3}{8}$	61	35 4

From the above it will be seen that *Shamshara* and *Vendamukhi* are the best yielding varieties. *Khari* is also not a bad yielder, and the cheapness of its cultivation makes it a favourite variety amongst the *raiyats*.

5. *Sunn hemp.*—Two and four-fifth acres of land were reserved by Mr. Finlow for sunn hemp. One and two-fifths acres failed and from $1\frac{2}{5}$ acres $8\frac{1}{4}$ maunds of fibre and 1 maund seed were obtained.

This was a very poor result.

6. *Potatoes.*—This farm is also suited to this crop. From $3\frac{1}{2}$ acres $303\frac{1}{2}$ maunds of tubers were obtained without irrigation and with an application of only 150 maunds of cowdung per acre. This works out at $86\frac{1}{2}$ maunds per acre which is only fair in comparison with 200 maunds per acre at Burdwan, but when we consider the cost of cultivation and the cost of 20 to 30 maunds of castor cake per acre, the above result from so little expenditure is very satisfactory. Two experiments were made on this crop—first variety and second middle *versus* small sets.

The results are set forth in the following tables:—

First potatoes, varieties.	Varieties.		Cut sets, Manure cow-dung.	Outturn.	Yield per acre.
	Area of plots.	Amount of seed.			
	Acres.	Mds.	Mds.	Mds.	Mds.
Italian ...	$\frac{2}{5}$	$4\frac{3}{4}$	150	$61\frac{1}{2}$	$102\frac{1}{2}$
Darjeeling ...	$\frac{2}{5}$	4	150	$65\frac{1}{2}$	$109\frac{1}{4}$
Nainital ...	$\frac{2}{5}$	6	150	$34\frac{1}{2}$	$57\frac{3}{4}$

Hence Italian and Darjeeling varieties were much superior to Nainitals.

Both these varieties are waxy and cook well in ghee. They are much appreciated by the people for cooking purposes.

7. *2nd Middle size* versus *small tubers for planting purposes.*—It is well known how the ordinary raiyat likes to use small sets for seed on account of the cheapness. It is a great mistake as the outturn varies according to the weight of potatoes sown. The following table explains this:—

	Area.	Seed.	Outturn.	Yield per acre.
	Acres.	Mds.	Mds.	Mds.
Darjeeling middle size sets ...	$\frac{2}{5}$	$3\frac{1}{2}$	$33\frac{3}{8}$	$83\frac{1}{2}$
Variety small size sets ...	$\frac{2}{5}$	$1\frac{1}{2}$	$6\frac{1}{2}$	$16\frac{1}{2}$

Hence the smaller the sets used the smaller will be the yield per acre.

C.—Conservation of cattle-dung.

The cowdung is stored in *kutcha* pits covered with a thatched roof, but this method of storing has not yet been compared with that of the raiyats. This will now be taken up.

D.—Distribution of seed.

The following table shows the amount of seed distributed from this farm during 1912-13:—

	Mds.
Jute seed	21
Cowpeas	11
Juar	3
Dhaincha	26

E.—Practical training of young men.

During the year one young man received practical training at this farm.

8. *Receipts and expenditure.*—During the year ending 31st March 1913 the following receipts were obtained at this farm:—

Rupees 3,075-12-9 for sale proceeds and Rs. 320 worth of seeds supplied to seed store, *i.e.*, altogether Rs. 3,395-12-9, while the following expenditure was incurred:—

	Rs.	A.	P.
Establishment	2,130	0	0
Labour and general expenses ...	3,383	5	6
Cattle food	371	11	6
Capital outlay	4,347	0	0
Total ...	10,232	1	0

9. *Acknowledgments.*—We are indebted to W. Leather, Esq., Imperial Agricultural Chemist, for the soil analyses.

10. *Management.*—Babu Hara Kumar Guha, was in charge of the farm during the year. His work was not very satisfactory.

During this period Mr. Smith inspected the farm frequently and the Director of Agriculture visited the farm.

F. Smith,

Deputy Director of Agriculture, Bengal.

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